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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Sheng Liu

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EXAMINER

JAIN, ANKUR

ART UNIT

PAPER NUMBER

2618

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/599,531	Applicant(s) LIU, SHENG	
	Examiner ANKUR JAIN	Art Unit 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>29 September 2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. **Claims 1 and 10** are objected to because of the following informalities:

“Plurality of radio frequency unit” should be changed to “plurality of radio frequency **units**.”

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. **Claims 1, 2, 4, 6, 8, 10-11, 13, 15, and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsunehara et al, US Patent 6,907,260 (hereafter referenced as Sun), in view of Sadri, US Patent 6,621,808 (hereafter referenced as Sadri).

Regarding **Claim 1 and Claim 10**, Sun teaches “an apparatus for controlling downlink power of the complex cell in the centralized base station system based on remote radio frequency units, said base station system having a plurality of radio frequency units” (see Abstract, Column 1 lines 55-60, Column 2 lines 55-60, and Figure 25). “Plurality of radio frequency units” reads on the radio modules 212 and 224. Sun also teaches “signal quality measuring means for measuring signal quality of an uplink channel between each radio frequency unit and the same user equipment” (see Column 6 lines 65-67 and Column 7 lines 1-15). Sun also teaches “power control means for adjusting transmission power of the downlink channel corresponding to the uplink channel according to said average signal quality, so that the transmission power of the downlink channel corresponding to the uplink channel with a lower average signal quality is relatively lower” (see Column 6 lines 66-67 and Column 7 line 1-15). Sun does not teach a “RAKE receiver.” However, Sadri generally teaches a “RAKE receiver” (see Figure 2C and Coherent Rake Receiver 156). Sun also does not teach “average signal quality calculating means for calculating average signal quality of each uplink channel according to the measured signal quality.” However, Sadri generally teaches “average signal quality calculating means for calculating average signal quality of each uplink channel according to the measured signal quality” (see Column 2 lines 1-15). It would have been obvious for one of ordinary skill in the art at the time the

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invention was made to modify Sun to incorporate the limitations of Sadri as taught by Sadri, for the purpose of enhancing the system efficiency and versatility on what the base station of Sun can accomplish by implementing the RAKE receiver and calculating means for calculating average signal quality.

Regarding **Claim 2 and Claim 11**, Sun teaches "characterized in that said signal quality is signal intensity" (see Column 7 lines 10-15). SIR is related to power, which clearly is related to "signal intensity."

Regarding **Claim 4 and Claim 13**, Sun teaches "characterized in that said signal quality is signal-interference ratio" (see Column 7 lines 10-15).

Regarding **Claim 6 and Claim 15**, Sun teaches "wherein said base station system has a merging unit for merging downlink physical channels so as to be modulated by a downlink modulating unit, characterized in that said power control means further comprise means for controlling the merging unit's proportion factor for other downlink physical channel inputs than a synchronous channel, so that the proportion factor of physical channel of the downlink channel having lower uplink average signal quality is relatively lower" (see Column 2 lines 1-5, Column 2 lines 50-60, Column 7 lines 1-15, and Figure 25). "Merging unit" reads on the adding circuit 26. Also, the "modulating unit" reads on the demodulating portions 215a to 215n. Also, "lower uplink average signal quality is relatively lower" reads on Column 7 lines 1-15.

Regarding **Claim 8 and Claim 17**, Sun teaches "characterized in that said power control means further comprises selecting means for comparing each average signal quality with a predetermined threshold, so that the downlink channel corresponding to

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the uplink channel with average signal quality below or equal to the threshold has transmission power of 0" (see Column 7 lines 1-15). "Comparing each average signal quality with a predetermined threshold" reads on the predetermined value and transmitting power controlling information accordingly in the disclosed column and line numbers. Also, the "transmission power of 0" can easily be achieved by the base station in Sun depending on the signal quality.

3. **Claims 3 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun in view of Sadri, as applied to Claim 1 above, and further in view of Jin et al, US 2005/0159118 A1 (hereafter referenced as Jin).

Regarding **Claim 3 and Claim 12**, the combination of Sun and Sadri does not teach "characterized in that said signal quality is code channel power." However, Jin generally teaches "characterized in that said signal quality is code channel power" (see Paragraph 0001). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the combination so that signal quality is code channel power as taught by Jin, for the purpose of accurately regulating transmitted power.

4. **Claims 5 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun in view of Sadri, as applied to Claim 1 above, and further in view of O'Neill, US 2006/0084379 A1 (hereafter referenced as O'Neill).

Regarding **Claim 5 and Claim 14**, the combination of Sun and Sadri does not teach "characterized in that said average signal quality is calculated over a period of time such that the average path losses of uplink and downlink channels are

substantially equal.” However, Sadri generally teaches “characterized in that said average signal quality is calculated over a period of time” (see Column 2 lines 1-15). Also, O’Neill generally teaches “such that the average path losses of uplink and downlink channels are substantially equal” (see Paragraph 0098). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the combination so that the average path losses of uplink and downlink channels are substantially equal as taught by O’Neill, for the purpose of increasing and enhancing system efficiency.

5. **Claims 7 and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun in view of Sadri, as applied to Claim 6 above, and further in view of Catreux et al, US 2002/0183010 A1 (hereafter referenced as Cat).

Regarding **Claim 7 and Claim 16**, the combination of Sun and Sadri does not teach “characterized in that said means for controlling the proportion factor performs said control by performing normalizing calculation on the average signal quality.” However, Cat generally teaches “characterized in that said means for controlling the proportion factor performs said control by performing normalizing calculation on the average signal quality” (see Paragraph 0008). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the combination so that said means for controlling the proportion factor performs said control by performing normalizing calculation on the average signal quality as taught by Cat, for the purpose of increasing and enhancing system efficiency.

6. **Claims 9 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun in view of Sadri, as applied to Claim 8 above, and further in view of Otsuka et al, US 2005/0026614 A1 (hereafter referenced as Otsuka).

Regarding **Claim 9 and Claim 18**, the combination of Sun and Sadri teaches “wherein said base station system has a merging unit for merging downlink physical channels so as to be modulated by a downlink modulating unit” (see claim 6). The combination of Sun and Sadri does not teach “characterized in that said power control means further comprise switching means for switching off the corresponding input of the downlink channel, determined by the selecting means as having transmission power of 0, to the merging unit.” However, Otsuka generally teaches “characterized in that said power control means further comprise switching means for switching off the corresponding input of the downlink channel, determined by the selecting means as having transmission power of 0, to the merging unit” (see Paragraph 0177). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the combination with the above limitation as taught by Otsuka, for the purpose of increasing and enhancing system efficiency.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ankur Jain whose telephone number is 571-272-9747. The examiner can normally be reached on M-F, 7:30 am to 5:00 pm, EST, Alternate Friday off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lana Le, can be reached on 571-272-7891. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ankur Jain/
Examiner, Art Unit 2618
04/24/2008

/Lana N. Le/
Acting SPE of Art Unit 2618